

CLAIM AMENDMENTS

Claim 1 (withdrawn) A method for installing underground pipe under a ground supported structure, comprising:

forming first and second trenches in the ground on opposite sides of the structure;

placing an axially elongated ground piercing tool in the first trench with a ground piercing tip of the tool facing the second trench;

driving the tool through the ground under the structure toward the second trench to form an in-ground tunnel between the first and second trenches; and

depositing an underground pipe in the in-ground tunnel while pulling the tool rearward from the tunnel toward the first trench

wherein the step of placing an underground pipe in the in-ground tunnel comprises:

pre-mounting the pipe on the tool with the pipe extending between the tip and an end portion of the tool; removing the tip from the tool; and pulling the tool from the in-ground tunnel leaving the pipe in place.

Claims 2 and 3 (canceled)

Claim 4 (withdrawn) A system for installing underground pipe under a surface structure comprising:

an axially elongated ground piercing tool for forming an in-ground tunnel under a surface structure with a forward movement of the tool in the ground under the structure, the tool having a pointed tip portion threaded to a threaded forward end portion of an axially extending rod portion of the tool; and

a pipe carried by the rod portion and captured between an end surface of the tip end portion and an outwardly enlarged portion of the rod for depositing in the in-ground tunnel with a removal of the tip end portion from the rod portion and a pulling of the rod portion rearward leaving the pipe in place in the tunnel.

Claims 5 (withdrawn) A system for installing underground pipe under a surface structure comprising:

an axially elongated ground piercing tool for forming an in-ground tunnel under a surface structure with a forward movement of the tool in the ground under the structure, the tool having a pointed tip portion including an externally threaded rearward extension for mating with an internally threaded cavity in a forward end of an axially extending rod portion of the tool; and

a pipe connector having a rearward threaded end

portion for mating with and releasably connecting to the internally threaded cavity in the forward end portion of the rod after a removal of the pointed tip portion from the rod, and having a forward threaded end portion for mating with and releasably connecting to a rearward end portion of an underground pipe for pulling the pipe rearward through the in-ground tunnel with rearward removal of the tool from the tunnel.

Claims 6 and 7 (canceled)

Claim 8 (withdrawn) The system of claim 5 wherein the rearward threaded end portion of the pipe connector comprises an externally threaded extension for mating with the internally threaded cavity in the rod portion of the tool.

Claim 9 (withdrawn) The system of claim 8 wherein the forward threaded end portion of the pipe connector comprises an internally threaded cavity for receiving an externally threaded rearward end portion of the pipe.

Claim 10 (withdrawn) The system of claim 8 wherein the forward threaded portion of the pipe connector comprises an axial extension carrying an externally threaded self tapping screw for cutting a thread in a hollow rearward end of a plastic pipe.

Claim 11 (withdrawn) The system of claim 5 wherein the rearward threaded end portion of the pipe connector comprises an internally threaded cavity for mating with an externally threaded extension from a forward end portion of the rod of the tool.

Claim 12 (withdrawn) The system of claim 11 wherein the forward threaded end portion of the pipe connector comprises an internally threaded cavity for receiving an externally threaded rearward end portion of the pipe.

Claim 13 (withdrawn) The system of claim 11 wherein the forward threaded portion of the pipe connector comprises an axial extension carrying an externally threaded self tapping screw for cutting a thread in a hollow rearward end of a plastic pipe.

Claim 14 (withdrawn) A ground piercing tool for the system of claim 5, the tool comprising:

an axially elongated ground piercing tool for forming an in-ground tunnel under a surface structure with a forward movement of the tool in the ground under the structure, the tool having a pointed tip portion threaded to a threaded forward end

portion of an axially extending rod portion of the tool, the rod portion including a forward facing end portion engaging a rearward facing portion of the tip portion to transmit axial driving forces from the rod portion to the tip portion.

Claim 15 (withdrawn) The tool of claim 14 wherein:
the tip portion of the tool includes an externally threaded rearward extension for mating with an internally threaded cavity in a forward end of the rod portion of the tool and
the forward facing end portion of the rod is outward of the cavity and extends forward to engage the rearward facing portion of the tip portion to transmit axial driving forces from the rod portion to the tip portion.

Claim 16 (withdrawn) The tool of claim 14 wherein:
the tip portion of the tool includes an internally threaded rearward cavity for mating with an externally threaded forward extension from the rod portion of the tool and
the forward facing end portion of the rod is outward of the externally threaded forward extension from the rod portion extends forward to engage the rearward facing portion of the tip portion outward of the internally threaded rearward cavity in the tip portion to transmit axial driving forces from the rod portion to the tip portion.

Claim 17 (withdrawn) A pipe connector for the system of claim 5, the pipe connector comprising:

a rearward threaded end portion for mating with and releasably connecting to a threaded forward end portion of a rod and having a forward threaded end portion for mating with and releasably connecting to a rearward end portion of an underground pipe for pulling the pipe rearward through an in-ground tunnel with rearward removal of the rod from the tunnel, the forward threaded end portion including a self tapping screw for cutting a thread in a hollow rearward end of a plastic pipe.

Claims 18-23 (canceled)

Claim 24 (currently amended) A ground piercing tool for tunneling under preexisting surface structures, comprising:

a ground piercing tip consisting of a forward facing pointed tip including, a rearward facing threaded portion and a radially extending rearward facing shoulder outward of the threaded portion;

an elongated axially extending first rod including a first forward facing threaded portion for mating with the rearward facing threaded portion of the tip,

a first radially extending forward facing shoulder

outward of the first forward facing threaded portion for engaging the rearward facing radially extending shoulder of the tip, and

a first rearward facing threaded portion, and for mating with a forward threaded portion of an end cap or a second rod of the tool a first radially extending rearward facing shoulder outward of the first rearward facing threaded portion; and

an end cap having a rearward facing axial impact surface, and a forward facing threaded portion for mating with [a] the first rearward threaded portion of the first rod or second rods and a radially extending forward facing shoulder outward of the forward facing threaded portion of the end cap for engaging the first rearward facing shoulder of the first rod,

the engaging radially extending shoulders in the tool relieving axial forces on the mating threaded portions in the tool generated by axial impacts on the axial impact surface of the cap .

Claim 25 (currently amended) The tool of claim 24 further comprising wherein:

a second rod between the first rod and the cap and comprising

a second forward facing threaded portion for mating with the first rearward facing threaded portion of the first rod,

a second rearward facing threaded portion for mating with the forward threaded portion of the cap,

a second radially extending forward facing shoulder outward of the second forward threaded portion for engaging the first rearward facing shoulder of the first rod, and

a second radially extending rearward facing shoulder outward of the second rearward facing threaded portion for engaging the forward facing extending shoulder of the cap

~~the first rod includes a second radially extending shoulder outward of the rearward threaded portion of the first rod and the end cap includes a radially extending shoulder outward of the forward threaded portion of the end cap for engaging the second radially extending shoulder of the first rod.~~